



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE

Southwest Region  
501 West Ocean Boulevard, Suite 4200  
Long Beach, California 90802- 4213

October 30, 2007

In response refer to:  
I/SWR/102904

Jim Rains  
Plant Health and Pest Prevention Services Division  
California Department of Food and Agriculture  
1220 N Street, Room A-316  
Sacramento, California 95814

Dear Mr. Rains,

NOAA's National Marine Fisheries Service (NMFS) has reviewed your initiation package for the treatment program for light brown apple moth (LBAM) in Santa Cruz and Northern Monterey Counties, California, submitted on October 1, 2007. The initiation package includes an environmental assessment (EA) dated September 2007, an application label and materials safety data sheet for the pheromone product CheckMate LBAM-F, and results from recent toxicity testing conducted on mussel (*Mytilus*) embryos by the University of California at Davis. The California Department of Food and Agriculture (CDFA) has been designated as a non-federal representative by the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) for purposes of Endangered Species Act (ESA) Section 7 consultation for this program by a letter received on June 18, 2007.

The LBAM is an invasive insect known to feed on numerous host plant species. It is feared that if the LBAM becomes established in agricultural areas that increased spraying of pesticides by private landowners will occur to control the pest and avert potential economic damages. Your agency (CDFA) is responsible for conducting control and eradication programs in California for such pests.

CDFA proposes to treat a large area of land in the Monterey Bay watershed stretching from Big Basin Redwoods State Park in the north to the City of Salinas in the south, inclusive, over the next several years. The initial treatment plan addresses approximately 60,000 acres within this area focused around the northern portion of the City of Salinas and the towns of Prunedale and Soquel. Treatment will consist of aerial application by fixed wing aircraft of the pheromone CheckMate LBAM-F and the hand deployment of pheromone laden dispensers referred to as twist-ties. The pheromone is intended to inhibit the ability of male LBAMs to find female LBAMs, causing a disruption of the mating cycle and resulting in control of the population. The product to be applied is a pheromone specific to the female LBAM. The pheromone is applied in biodegradable microencapsulated polymer at sizes of 80 to 150  $\mu$ m. In this form the pheromone



is expected to be effective for 30 days after which another application may take place. The applications will occur at night at a rate of 15 grams of active ingredient per acre. At least two applications are planned, although more treatments will likely be necessary over several years. They will be scheduled based upon the results of monitoring for LBAM.

Available information indicates that the following listed species (Evolutionarily Significant Units [ESU] or Distinct Population Segments [DPS]) and designated critical habitat may be affected by the CDFA's proposal:

**Central California Coast steelhead DPS (*Oncorhynchus mykiss*)**

threatened (January 5, 2006, 71 FR 834)

critical habitat (September 2, 2005, 70 FR 52488)

**Central California Coast Coho ESU (*Oncorhynchus kisutch*)**

endangered (June 28, 2005, 70 FR 37160)

critical habitat (May 5, 1999, 64 FR 24049)

In addition, the project is located within an area identified as Essential Fish Habitat (EFH) for coho salmon under the Pacific Coast Salmon Fishery Management Plan (FMP) as regulated by the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Coastal waters are designated as EFH for life stages of fish managed under the Pacific Groundfish FMP (rockfishes, flatfishes, sharks, *etc.*) and the Coastal Pelagics FMP (northern anchovy and Pacific sardine).

Exposure of the above ESA listed species and their habitat to the biopesticide is likely to take place due to the proposed aerial application method. However the product will not be applied directly to open water and the resulting exposure to salmonid waterways is expected to be low. Nonetheless, the CDFA presented information on the pheromone and related products to support its determination that the project is not likely to adversely affect the listed species and their habitats.

Toxicity testing of CheckMate LBAM-F was not required by the United States Environmental Protection Agency (EPA) because this class of compounds (straight chain lepidopteran pheromones) has been shown to have low toxicity in previous tests. Data produced for structurally similar compounds, used here as surrogates, generated LC<sub>50</sub>s (lethal concentration to 50% of the test population, a common acute lethality indicator) for rainbow trout of >100 mg/L (parts per million) up to 270 mg/L. Similar testing on the water flea (*Daphnia magna*) produced LC<sub>50</sub>s ranging from 1.3 to 6.8 mg/L.

By comparison, modeling conducted by USDA APHIS in support of this project (USDA 2007) predicts concentrations of 0.01 mg/L in a waterbody which receives a direct application. This concentration is more than 100 times less than the lowest LC<sub>50</sub> for the water flea and 10,000 times less than the LC<sub>50</sub> for rainbow trout. This modeled exposure level is considered to be high due to the conservative assumptions built into the model of a higher application rate than planned (20 gallons/active ingredient/acre modeled vs. 15 planned), static water conditions, complete solubility, no degradation and no volatilization of the product.

In reality, these pheromone products are nearly insoluble. The active ingredients of CheckMate LBAM-F are (E)-11-Tetradecen-1-yl acetate and (E,E)-9,11-Tetradecadien-1-yl acetate which both have a chemical makeup of  $C_{16}H_{30}O_2$ . A tested pheromone used for codling moth control, Z-9-Tetradecen-1-yl acetate, has the same makeup ( $C_{16}H_{30}O_2$ ) and a solubility of  $<0.1$  mg/L (EPA 2007a). A slightly larger pheromone used for Western Poplar Clearwing Moth control, E,Z-3,13-octadecadien-1-ol ( $C_{18}H_{34}O$ ), has a solubility of 0.090 mg/L (EPA 2006). These low levels of solubility, coupled with a specific gravity of  $<1$  for the proposed product (Sutterra 2007), mean that the pheromone is expected to not mix into the water column resulting in even lower levels of exposure than predicted in the model.

In addition to the low solubility of this class of products, studies on the fate of straight chain lepidopteran pheromones on moistened soil and in water showed rapid dissipation mainly due to volatilization (OECD 2002). Half-lives for similar compounds were shown to be between 29-50 hours in soil (22°C) and between 30-90 hours in water (24°C). These relatively rapid degradation rates, coupled with any exposure occurring in flowing water, make it further unlikely to result in acute adverse effects to listed salmonids. Sublethal effects to listed salmonids are also not expected from these low levels of exposure. Impacts to critical habitat components such as aquatic insect production are not likely because of the low concentrations expected. Additionally, the buoyancy of the product will not allow it to encounter streambed gravels where aquatic insect production typically takes place.

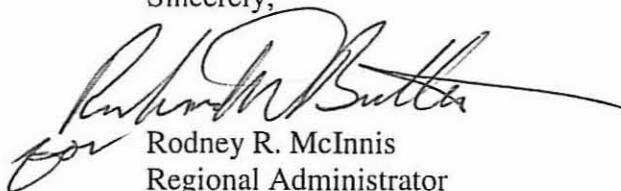
EPA has also reviewed the inert ingredients in the CheckMate LBAM-F product and has determined that they also have low toxicity and are not expected to cause impacts to listed salmonids or their habitats (EPA 2007b). The formulated product is approximately 70% water, 18% pheromones and 12% inert products. EPA reports that they have not received any reports of adverse effects to the environment from the use of straight chain lepidopteran pheromone products despite a long history of use in the United States. They are not aware of any such reports from Australia either (EPA 2007b).

Based upon the best available information, NMFS concurs with your determination that the proposed treatment program for LBAM in Santa Cruz and Northern Monterey Counties, California is not likely to adversely effect listed species under the jurisdiction of NMFS. NMFS has determined that the proposed program is not likely to adversely affect designated critical habitat or EFH. This concludes consultation in accordance 50 CFR §402.13(a). However further consultation may be required if: (1) new information becomes available indicating that listed species or critical habitat may be affected by the project in a manner or to an extent not previously considered; (2) current project plans change in a manner that causes an effect to listed species or critical habitat in a manner not previously considered; or (3) a new species is listed or critical habitat designated that may be affected by the action.

Thank you for contacting us early to conduct informal consultation on this project. The discussions were very helpful in understanding the project scope and planning. If you have any questions regarding this consultation, or to discuss the project further as it evolves, please contact

Joe Dillon, NOAA Fisheries Southwest Region Water Quality Coordinator, at (707) 575-6093 or Joseph.J.Dillon@noaa.gov.

Sincerely,



Rodney R. McInnis  
Regional Administrator

cc: Bob Hoffman, NMFS, Long Beach, California  
Russ Strach, NMFS, Sacramento, California  
Steve Edmondson, NMFS, Santa Rosa, California  
Joyce Ambrosius, NMFS, Santa Rosa, California  
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#### References

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Suterra 2007. Material Safety Data Sheet: CheckMate LBAM-F under Section 18. 4 pp.

USDA 2007. Environmental Assessment, Treatment Program for Light Brown Apple Moth in Santa Cruz and Northern Monterey Counties, California. September 2007. 82 pp.

US EPA 2007a. Biopesticide Registration Document. Straight Chain Lepidopteran Pheromones (SCLP). Office of Pesticide Programs, Biopesticides and Pollution Prevention Division. 57 pp.

US EPA 2007b. Factsheet: EPA Quarantine Exemptions for Light Brown Apple Moth Pheromones. USEPA Region IX. August 29, 2007. 4 pp. Accessed at:  
[www.epa.gov/pesticides/local/region9/lbam\\_quarantine.htm](http://www.epa.gov/pesticides/local/region9/lbam_quarantine.htm)

US EPA 2006. Biopesticide Registration Document. (E,Z)-3,13-Octadecadien-1-ol and (Z,Z)-3,13-Octadecadien-1-ol Western Poplar Clearwing Moth Pheromone (PC Codes 129117 and 129118). Office of Pesticide Program, Biopesticides and Pollution Prevention Division.